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ORIGINAL ARTICLE

THE IMPACT OF PRODUCT MARKET COMPETITION ON EARNINGS QUALITY OF LISTED COMPANIES ON TEHRAN STOCK EXCHANGE

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ABSTRACT: Net profit is of great importance in financial reporting. Financial data users pay much attention to the disclosed amount of earnings when evaluating financial statuses, and much more attention to earnings quality. Earnings quality mentioned in financial statements is broadly influential in economic decision makings. Mention must be made though that earnings quality is a multidimensional concept which can be affected by various elements, and economic scholars have not yet achieved a unique and adequately qualified independent approach of profit estimation. The present study mainly aims to examine the impact of product market competition on earnings quality of listed companies on Tehran stock exchange. Research sample is comprised of 117 listed companies on Tehran stock exchange over a period of 2001-2009. Econometric analysis of Panel data was applied to assess the relationship between variables. Three criteria of Herfindal index (HI), tobin's Q, and active companies in each industry were considered as competitive measures of product market competition. Ordinary least squares (OLS) regression was utilized to test research hypotheses and investigate the relationship between variables. The obtained findings indicated a positive significant relationship between product market competition and earnings quality in reported financial statements.

KEYWORDS: earnings quality, product market competition, industry concentration, competitive edge

INTRODUCTION

Net profit is one of the most important financial information which is paid much attention in economic decision makings. Earnings quality is a dimension of profit evaluation which is worthy of consideration. Furthermore, it shows accounting earnings. Incorrectly estimated earnings can bring about wrong investments provided by funders and non-optimum allocation of resources and finally economic depression (Haghighat and Panahi, 2011).

Francis *et al.*, (2004) examined the relation between the cost of equity capital and seven attributes of earnings mostly mentioned in accounting. They characterized four attributes of earnings, accrual quality, persistence, and smoothness as accounting-based, since they are typically measured using accounting information only; and characterized three attributes of value relevance, timeliness, and conservatism as market-based, since proxies for these constructs are typically based on relations between market data and accounting data. These market-based attributes take returns or prices as the reference construct; consequently, measures of these attributes are based on the estimated relation between accounting earnings and market prices or returns. Economics department undertake the responsibility of preparing and delivering financial reports. Many factors are effective in management perspective when making decision about information disclosure policies. It is obvious that information disclosure cannot occur at any cost, while other factors are also influential in choosing an appropriate method to disclose the information.

Increasing requests for Information disclosure and financial reports are derived from information asymmetry, conflict of interests, challenges between shareholder (as the owner) and manager (as the agent), although a manager can be stimulated to disclose information as a consequence of other economic determiners and internal conditions of business units. Information disclosure can drastically jeopardize the economic status, as it provides other competitors with useful policies and strategies. Therefore, the following question is intended to be answered in the current study:

Is there a significant relationship between product market competition and earnings quality of listed companies on Tehran stock exchange?

THEORETICAL BACKGROUND OF THE RESEARCH

Earnings quality is a multidimensional concept (Francis *et al.*, 2005) and economic scholars

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have not yet achieved a unique and adequately qualified independent approach of profit estimation. In such situations, they can make some modifications and demonstrate earnings quality correctly. So, the concept of earnings quality is not invariantly defined; various scholars define it differently in order for its assessment (Moradi *et al.,* 2010). Managers' independency when applying accounting standards, estimations, and expectancy are all effective elements in earnings quality. On the one hand, managers are expected to prepare needed information in a way that reflects the company's status appropriately, and on the other hand, the manager may consciously or unconsciously introduce the company's status favourably due to some reasons such as being retained in the company, It can be concluded that earnings quality is affected by reporting basics and managers' discretion.

2.1. Agency costs

Existing conflicts between agents and owners are of considerable attention. In fact, increasing management authorities and beneficiaries can bring about agency costs. It is believed that agency costs are generated by the contractual arrangements between the owners and top management of the corporation (Jensen and Meckling, 1976). Reviewed literature indicates that consistent product market competition and management incentives can decrease agency costs. Appropriate conditions of product market competition and management in order to retain manager and company's interests, and also timely disclosure of information can lessen the agency costs.

2.2. Political expenses

Watts and Zimmerman, (1986) in their paper proved that managers choose accounting strategies which decrease the possibility and amount of transfer, when confronting political adversities of wealth transfer. Jones, (1991) stated that managers attempt to manage earnings in order to increase the likelihood of obtaining public and private supports. In fact, they try to manage financial statements in a way that avoid outflow of economic benefits, and retain company's value. When competition level is inappropriate, manager prevent from disclosing information with high quality in order not to attract general and political attention.

2.3. Competition

The concept of competition can be considered as a resource which is greatly effective in making market prices and natural ones convergent. Natural prices are competitive prices which prepare a condition in which the rate of experts' salaries and investment's interests are the same in all economic activities (Khodadad Kashi, 2009).

2.4. Competition measurement

Product market competition can be assessed through various methods. Industry concentration is one of completion factors. Ali *et al.,* (2009) suggested Herfindahl-Hirschman as the best index of competition evaluation. Herfindahl-Hirschman is a commonly accepted measure of market concentration which is calculated by squaring the market share of each firm competing in a market, and then summing the resulting numbers. The higher the market's concentration (and the lower its competition), the closer it is to being a monopoly, and vice versa. By and large, industries with lower concentration are more competitive.

Economic scholars have introduced different indexes in order to calculate the amount of product market competition. Number of active firms in each industry and tobin's Q can be utilized to measure product market competition. Large number of active firms in an industry shows market dynamism and competition appropriateness. Tobin's Q refers to monopoly in the market whose high level indicates inappropriate competition.

REVIEW OF LITERATURE

Researches related to product market competition can be mentioned as follows:

3.1. External researches

LeRoy and Porter, (1981) conducted a research entitled "The present-value relation: tests based on implied variance bounds", Campbell and Shiller, (1988) did a research under the title "The dividend-price ratio and expectations of future dividends and discount factors", and Vuolteenaho, (2002) accomplished a study entitled "What drives firm-level stock returns?." in which market performance and competition play a deterrent role due to expense shocks and fluctuations of cash flows. They also found that industry concentration can affect the relationship between cash flows and accruals.

Holmstrom, (1982) did a research entitled "Moral hazard in teams", and Nalebuff and Stiglitz, (1983) done a research entitled "Prizes and incentives: towards a general theory of compensation and competition" in which they proved that high level of market competition in an industry can provide a basis for evaluating firm performances. Furthermore, they pointed out that the enhancement of product market competition can improve managers'

performance through supplying a managers' evaluation basis.

Hart, (1983) under a research entitled "The market mechanism as an incentive scheme" showed that competition in the product market reduces managerial slack if firms' environment is correlated. In such environments, not only can a manager be evaluated by himself/herself, but also their performance can be assessed by other managers who are active in that industry.

Darrough and Stroughton, (1990) conducted a study under the title "Financial disclosure policy in an entry game" analyzed incentives for voluntary disclosure of proprietory information. Focusing on a stylized model of a static entry game, we show that fully revealing disclosure equilibrium exists when the prior of the market is optimistic or the entry cost is relatively low. When the prior is pessimistic or the entry cost is high, however, both non- and partial-disclosure equilibria obtain. Their analysis predicted that competition in the product market encourages voluntary disclosure.

Healy and Palepu, (2001) did a research under the title "Information asymmetry, corporate disclosure, and the capital markets: a review of the empirical disclosure literature". They stated that financial reporting and disclosure are potentially important means for management to communicate firm performance and governance to outside investors.

Ho-yin Man, (2009) did a research entitled "the impact of product market competition on earnings quality" and examined the impact of product market competition on earnings quality. His findings demonstrated that firms in concentrated industries tend to protect their competitive advantage. Moreover, he concluded that there is a significant positive relationship between product market competition and earnings quality.

Ali *et al.*, (2009) accomplished a study under the title "product market competition and corporate disclosure policy" and showed that firms in more concentrated industries have more independent investment strategies with rivals. Incumbents in such industries prefer less informative disclosure policies to avoid providing competitors with strategically useful information. Specifically they find that firms in more concentrated industries offer less frequent earnings forecast; are less likely to make long-term forecasts; receive lower disclosure ratings from analysts; and have more opaque information environments. Their findings suggested that corporate disclosure policy is influenced by firms' attempts to avoid providing rivals with proprietary information.

3.2. Internal researches

Khodadad Kashi, (2009) defined the concepts related to competition under a research entitled "different perspectives about competition and its comparison with competitive status in industrial departments of Iran". He pointed out that in economic areas of Iran, there is no competition between different businesses, but it exists in different sections.

Shahiki Tash, (2011) did a research entitled "competition, efficiency, and competitive policy, case study: Iran", and focused on the issue that product market completion can increase efficiency and productivity, and bring economic growth. He concluded that competition and efficiency are positively related to each other, so are competition and productivity.

Ghafarlou, (2011) study was entitled "the investigation of product competition structures and conditional conservatism." In this research, Ghafarlou referred to the point that competitive pressure increase is one of the most important factors of conditional conservatism. The effects of five dimensions of competition (replacement, volume of demand, entry obstacles, concentration ratio, and number of firms) on conditional conservatism were investigated in this research. He finally found that there is a positive significant relationship between product competition structures and conditional conservatism in financial reporting.

Ebrahimi, (2011) accomplished a study under the title "the relationship between product market competition and capital structure in listed companies on Tehran stock exchange" and stated that market power or product market competition is effective in financing business units. This research mainly aimed to study the effects of product market competition on capital structure in listed companies on Tehran stock exchange. Four various criteria of Tobin's Q, entry obstacles, replacement capacity, competition were considered as competition indexes of product market. It was concluded that there is negative significant relationship between product market competition and capital structure.

RESEARCH HYPOTHESIS

In order to answer the research question, the following hypothesis has been designed:

There is a significant relationship between competition and earnings quality of listed companies on Tehran stock exchange.

RESEARCH METHODOLOGY

The present study is a quasi-experimental and export facto research which is based on actual information and positive researches in the field

of accounting. It intends to discover the relationship between variables through studying findings of other researches. In other words, the researcher examines cause and effect relations by means of observation to find the reasons of a new phenomenon.

5.1. Research model and variables

Model 1 was applied in this study in order to test the hypothesis:

Model 1

$$EQ_{j,t} = \lambda_0 + \lambda_1 SIZE_{j,t} + \lambda_2 \sigma(CFO)_{j,t} + \lambda_3 \sigma(SALES)_{j,t} + \lambda_4 OPCYCLE_{j,t} + \lambda_5 \Delta CA_{j,t} + \lambda_6 \Delta CL_{j,t} + \lambda_7 LEVERAGE_{j,t} + \lambda_8 MB_{j,t} + \lambda_9 (COMP-SCOER)_{j,t} + \mu_{j,t}$$

Where;

$EQ_{j,t}$= the dependent variable of the research and the proxy for earnings quality for industry *j* in year *t*

$(COMP\text{-}SCORE)_{j,t}$ = intensity of competition for industry *j* in year *t*

$Hi_{j,t}$= intensity of industry concentration for industry *j* in year *t*

$Qtob_{j,t}$= index of Q for industry *j* in year *t*

N firms $_{j,t}$= number of active firms for industry *j* in year *t*

$SIZE_{j,t}$= size of firms for industry *j* in year *t*

$\sigma(CFO)_{j,t}$= standard deviation of industry *j's* cash flows from operation in year *t*

$\sigma(SALES)_{j,t}$= standard deviation of industry *j's* sales revenues in year *t*

OPCYCLE $_{j,t}$= log of the sum of industry *j's* days accounts receivable and days inventory in year *t*

$\Delta CA_{j,t}$= change in current assets for industry *j* in year *t*

$\Delta CL_{j,t}$= change in current liabilities for industry *j* in year *t*

$LEVERAGE_{j,t}$= leverage ratio for industry *j* in year *t*

MB $_{j,t}$= industry *j's* market value of equity divided by its book value of equity in year *t*

$\mu_{j,t}$= error

λ_0= fixed, $\lambda_1, \lambda_2, \ldots, \lambda_9$ = variables coefficient

5.1.1. Dependent variable and its measurement

Earnings quality is the dependent variable of the research which is calculated as follows:

Accrual $_{j,t}$= Earn $_{j,t}$ – CFO $_{j,t}$

Where;

Earn $_{j,t}$ = net profit before extraordinary items for industry *j* in year *t*

CFO $_{j,t}$ = cash flow from operations based on international standards for industry *j* in year *t*

5.1.2. Independent variable and its measurement

The index of competition score was utilized to calculate product market competition and test the research hypothesis. Industry concentration, Tobin's Q, and number of active firms were regarded when assessing the index of competition score.

5.1.3. Industry concentration index

Herfindahl-Hirschman index, which is calculated by squaring the market share of each industry competing in a market, and then summing the resulting numbers, was applied to assess industry concentration.

$$HI_{j,t} = \sum_{j=1}^{n} S_{j,i,t}^2$$

Where;

Hl $_{j,t}$= Herfindahl – Hirschman indexes which show concentration level in industry *i*

S $_{j,t}$= market share of firm *i* in industry *j*

n= number of active firms in each industry

Market share of each firm can be calculated by different variables. Sum of sales and assets is the most common method of assessing market share of each firm. The current study used sum of sales.

5.1.4. Tobin's Q index

Tobin's Q is an appropriate index of competition assessment both theoretically and practically, and is calculated as follows:

$$Q_{j,t} = \frac{\text{equity market value} + \text{liabilities market value}}{\text{equity book value}}$$

If Tobin's Q equals more than one, promising investing opportunities and firm growth are predicted. If it becomes less than one, investments will be stopped (Tobin, 1969).

5.1.5. Number of active firms in each industry

Natural logarithm of active firms in each industry is used for calculating the tension of competition in each industry.

NFIRMS $_{j,t}$ = Ln (N $_{j,t}$)

Where;

N= number of active firms in each industry

5.1.6. Competition score

Three aforementioned dimensions can be combined and create a variable in order to assess competition score and test the research hypothesis, by using decile ranks for each competition dimension. Low values of HI and Tobin's Q could be an indication of fierce competition in the market. So, the lowest decile received 10, the next one got 9, ... and the tenth one got 1. Due to the fact that high amounts of

NFIRMS demonstrated more fierce competition, it was calculated inversely (the tenth decile got 10, ...) and then, industries' scores were summed and divided into 30 (the highest possible score). Finally, COMP-SCORE can be obtained.

5.1.7. Control variables and their measurement

Control variables which were used in this model can be explained in the following manner:

Size: each industry's size equals its assets. Natural logarithm of total assets was applied as control variable.

$SIZE_{j,t} = Ln\ (TA_{j,t})$

$\sigma(CFO)_{j,t}$

$\sigma(SALES)_{j,t}$

$$OPCYCLE_{j,t} = Ln\left(\frac{360}{\text{recievable business workflow of accounts and documents}} + \frac{360}{\text{current commodity turnover}}\right)$$

$$= \frac{\text{turnover frequency of net sales}}{(\text{account balances} + \text{final step})/2}$$

$$\textit{commodity turnover frequcny} = \frac{\text{price of sold commodities}}{(\text{commodities in the first stage} + \text{commodities in the last stage})/2}$$

$\Delta CA_{j,t} = CA_{j,t} - CA_{j,t-1}$
$CA_{j,t}$ = current assets of firms for industry j in year t
$CA_{j,t-1}$ = current assets of firms for industry j in year $t-1$
$\Delta CL_{j,t} = CL_{j,t} - CL_{j,t-1}$
$CL_{j,t}$ = current liabilities of firms for industry j in year t
$CL_{j,t-1}$ = current liabilities of firms for industry j in year $t-1$

$$LEVERAGE_{j,t} = \frac{\text{sum of liabilities}}{\text{market value of shareholders' rights}}$$

$$MB_{j,t} = \frac{\textit{market value of shareholders' rights}}{\text{book value of shareholders' rights}}$$

RESEARCH FINDINGS

Panel data analysis deployed in this section in order to investigate and estimate the general model of the research. Type and nature of the achieved data made us choose this approach, since in panel data, they should be cross-sectional. Multiple regression model was utilized to test research hypothesis.

6.1. Descriptive statistics

Descriptive statistics is consisting of mean, maximum, minimum, and standard deviation which can be observed in table (1). As it can be noticed in this table, mean of accruals is about 0.2397; mean of product market competition score is 0.69; the nearer this score is to one, the less the market power will be, as a result, the market is more competitive. Mean of industry concentration is 0.2830, and considering the low amount of industry concentration is an indication of competitive product market in that specific industry; the inverse relation is also correct. Mean of Tobin's Q is 1.6012 which shows that market value is more than book value. Least number of active firms in each industry is three; this number was calculated with regard to existing limitations. Number of active firms in each industry will be at most 15. According to theoretical background, large number of active firms in each industry proves an appropriate level of competition in that industry. Other data comprise minimum, maximum, mean, and standard deviation in table (1).

Table 1: Descriptive statistics of applied variables in the model

Variable	Minimum	Maximum	Mean	Standard deviation
Accruals	-0.04719	0.8180	0.1317	0.1095
$SIZE_{j,t}$	12.20	15.72	13.4671	0.74087
$\sigma(CFO)_{j,t}$	0.007377	0.9302	0.12755	0.11530
$\sigma(SALES)_{j,t}$	0.08580	7.4715	0.6953	0.7498
$OPCYCLE_{j,t}$	5.02	6.64	5.6441	0.34966
$\Delta CA_{j,t}$	-1.1970	2.042	0.7425	0.2778
$\Delta CL_{j,t}$	-2.3129	0.3281	0.0812	0.2633
$LEVERAGE_{j,t}$	0.14	3.90	1.2206	0.84477
$MB_{j,t}$	0.77	16.55	2.6937	2.19931
Competition intensity	0.3	0.978	0.69	0.15
Industry concentration	0.09	0.5765	0.2830	0.12
Tobin's Q	0.76	5.63	1.6012	0.75602
Number of active firms in each industry	3	15	8.2500	3.2351

Table 2: Results of linear regression

Variable	Expected sign	Variable coefficient	T statistic	Significance level
Fixed amount	....	0.1111	0.5427	0.000
$SIZE_{j,t}$	+/-	0.002538	0.3553	0.7230
$\sigma(CFO)_{j,t}$	+	0.008365	0.1220	0.09031
$\sigma(SALES)_{j,t}$	+	0.002072	0.2379	0.8124
$OPCYCLE_{j,t}$	+	-0.0183	-1.0150	0.3123
$\Delta CA_{j,t}$	+/-	0.03983	1.4016	0.1640
$\Delta CL_{j,t}$	+/-	-0.00153	-1.04664	0.0962
$LEVERAGE_{j,t}$	+	-0.0238	-3.274	0.0014
$MB_{j,t}$	-	0.00375	2.586	0.0111
$Competition_{j,t}$	+	0.1308	2.220	0.0286
F= 4.4691	P(V-VALUE)=0.000	Adjusted R^2=0.2195	D.W=1.643	

6.2. Results of hypothesis testing

The relationship between completion intensity and earnings quality was tested in listed companies on Tehran stock exchange.

As it can be noticed in table (2), f statistic equals 4.4691 which shows the significance of regression at the level of %99. Durbin-Watson is 1.643 which rejects the existence of auto-correlation among model's errors. Adjusted R^2 is 0.2195 which proves a powerful relationship between dependent and independent variables.

Considering the achieved data shown in table (2), t statistic for competition score index is 2.220; and p-value is 0.0286 which is more than confidence level of 1. First hypothesis, associated with earnings quality, cannot be confirmed at the confidence level of %99, but it can be confirmed at the level of %95. Therefore, it can be alleged that there is significant positive relationship between competition intensity and earnings quality at the confidence level of %95. In other words, competition increase can enhance the level of earnings quality in listed companies on Tehran stock exchange, and its decrease lessens earnings quality.

As it was explained, product market competition can in long-term omit extraordinary profits, and firms gradually can earn adequate interests. Moreover, information disclosure should be more cautiously conducted in competitive conditions. When product market competition is evaluated correctly, the quality of earnings will be higher.

Owing to the fact that product market competition provides a criterion for measuring management performance, earnings quality will be assessed appropriately in competitive industries and vice versa. The obtained findings of testing research hypothesis were consistent with the findings of Ho-yin Man, (2009), and Ali *et al.*, (2009).

CONCLUSION AND SUGGESTIONS

This study aimed to assess the effect of product market competition on earnings quality of listed companies on Tehran stock exchange. Stock analysts, managers, investors, and other participants in capital market pay much attention to net profit as the last informative data in loss and gain. Accounting data users recall reported earning as a criterion for evaluating the continuing activities and efficiency and reviewing the contracts signed by economic units' agents.

Due to pleasant or unpleasant sequences of reported earnings for managers of economic units, a manager is motivated enough to manipulate them. So, it can be concluded that considering only the amount of reported earnings is not sufficient, but are other elements also effective such as earnings quality.

Earnings quality theory was first introduced by financial analysts and stock agents, since they believed that reported earnings were not equal with what came to their mind as earnings power. As it has been noted, earnings quality is a multidimensional concept, and economic scholars have not yet achieved a unique and adequately qualified independent approach of profit estimation. So, it is not a fixed concept and various definitions can be employed in order to assess it. One of elements which affect earnings quality is product market competition. The current study intended to investigate the relationship between earnings quality and product market competition.

Target population of the research was consisting of 117 listed companies on Tehran stock exchange. They were chosen among 14 industries. Panel data analysis was applied, the numbers of studied year-firm and year-industry were respectively 936 and 112. Finally, correlation and linear regression were used to analyze data and test the hypothesis.

Model testing demonstrated a positive significant relationship between product market competition and earnings quality at the confidence level of %95. Competition intensity index showed the level of competition in market. If competition intensity is high in an industry, product market competition will be high in that

industry, and vice versa. Positive significant relationship between competition intensity and earnings quality shows that in industries whose competition intensity is high, manager report the earnings quality in a way that seems appropriate.

Mention must be made though that based on theoretical background, competition creates interrelation among the firms. When a firm is correlated to others, not only can a manager be evaluated by himself/herself, but also their performance can be assessed by other managers who are active in that industry. As a result, s/he employs more appropriate strategies for information disclosure. As it can be observed in section 4, active firms employ more proper policies, and therefore, their reported earnings have higher quality.

It should be pointed out that nowadays some factors are considerable importance such as recurring changes in business environments, increased competition inside and outside the country, new competitors in industrial and offering areas, implementation of new strategies in order to retain and improve organizations' status. Today, the principle of completion has been accepted, and organizations have to develop their performance, efficiency and effectiveness to be able to compete with others inside and outside the country.

Business units try to decrease their agency costs and prices of commodities and services. Agency costs will lessen through information transparency increase, earnings quality improvements in financial statements, facilitating the process of absorbing investments, and observing managers' performance. It can be thus expected that active firms can access policies in order to enhance the quality of financial reports in competitive industries.

According to achieved findings of the research, the following suggestion can be taken into consideration:

1. Investors: accounting information quality is of great importance for investors when decision making. They pay much attention to the amount of reported quality in financial statements. They can use associated data with product market competition and its effects on accounting information and earnings quality in order to start or stop a business activity.
2. Creditors: creditors pay heeds to the firm's financial and liquidity status when making decision and assigning credits to the firm. The quality of reported earnings can demonstrate liquidity status of the firm. So, they can obtain more detailed assessments and be sure of their findings.
3. Business units' management: managers are responsible for taking general policies of information disclosure. They can use the findings of this study in order to employ more appropriate strategies with regard to product market competition and firm value.
4. Auditors: applying the best auditing approach has been always under consideration. Reported earnings quality in financial statements can affect auditing methods. Auditors can use the findings of this research and the level of competition and its effects on earnings quality when employing an auditing approach.

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